AATATTTTCCTTGACCTAATGCCATCTTGTGTCCCCTTGCAGAGCCCTATTCCTAACATGGCTGATGACTA
TGGCTCTGAATCCACATCTTCCATGGAAGACTACGTTAACTTCAACTTCACTGACTTCTACTGTGAGAAAA
ACAATGTCAGGCAGTTTGCGAGCCATTTCCTCCCACCCTTGTACTGGCTCGTGTTCATCGTGGGTGCCTTG
GGCAACAGTCTTGTTATCCTTGTCTACTGGTACTGCACAAGAGTGAAGACCATGACCGACATGTTCCTTTT
GAATTTGGCAATTGCTGACCTCCTCTTTCTTGTCACTCTTCCCTTCTGGGCCATTGCTGCTGCTGACCAGT
GGAAGTTCCAGACCTTCATGTGCAAGGTGGTCAACAGCATGTACAAGATGAACTTCTACAGCTGTGTGTTG
CTGATCATGTGCATCAGCGTGGACAGGTACATTGCCATTGCCCAGGCCATGAGAGCACATACTTGGAGGGA
GAAAAGGCTTTTGTACAGCAAAATGGTTTGCTTTACCATCTGGGTATTGGCAGCTGCTCTCTGCATCCCAG
AAATCTTATACAGCCAAATCAAGGAGGAATCCGGCATTGCTATCTGCACCATGGTTTACCCTAGCGATGAG
AGCACCAAACTGAAGTCAGCTGTCTTGACCCTGAAGGTCATTCTGGGGTTCTTCCTTCCCTTCGTGGTCAT
GGCTTGCTGCTATACCATCATCATTCACACCCTGATACAAGCCAAGAAGTCTTCCAAGCACAAAGCCCTAA
AAGTGACCATCACTGTCCTGACCGTCTTTGTCTTGTCTCAGTTTCCCTACAACTGCATTTTGTTGGTGCAG
ACCATTGACGCCTATGCCATGTTCATCTCCAACTGTGCCGTTTCCACCAACATTGACATCTGCTTCCAGGT
CACCCAGACCATCGCCTTCTTCCACAGTTGCCTGAACCCTGTTCTCTATGTTTTTGTGGGTGAGAGATTCC
GCCGGGATCTCGTGAAAACCCTGAAGAACTTGGGTTGCATCAGCCAGGCCCAGTGGGTTTCATTTACAAGG
AGAGAGGGAAGCTTGAAGCTGTCGTCTATGTTGCTGGAGACAACCTCAGGAGCACTCTCCCTCTGAGGGGT
CTTCTCTGAGGTGCATGGTTCTTTTGGAAGAAATGAGAAATACATGAAACAGTTTCCCCACTGATGGGACC
AGAGAGAGTGAAAGAGAAAAGAAAACTCAGAAAGGGATGAATCTGAACTATATGATTACTTGTAGTCAGAA
TTTGCCAAAGCAAATATTTCAAAATCAACTGACTAGTGCAGGAGGCTGTTGATTGGCTCTTGACTGTGATG
CCCGCAATTCTCAAAGGAGGACTAAGGACCGGCACTGTGGAGCACCCTGGCTTTGCCACTCGCCGGAGCAT
CAATGCCGCTGCCTCTGGAGGAGCCCTTGGATTTTCTCCATGCACTGTGAACTTCTGTGGCTTCAGTTCTC
ATGCTGCCTCTTCCAAAAGGGGACACAGAAGCACTGGCTGCTGCTACAGACCGCAAAAGCAGAAAGTTTCG
TGAAAATGTCCATCTTTGGGAAATTTTCTACCCTGCTCTTGAGCCTGATAACCCATGCCAGGTCTTATAGA
TTCCTGATCTAGAACCTTTCCAGGCAATCTCAGACCTAATTTCCTTCTGTTCTCCTTGTTCTGTTCTGGGC
CAGTGAAGGTCCTTGTTCTGATTTTGAAACGATCTGCAGGTCTTGCCAGTGAACCCCTGGACAACTGACCA
CACCCACAAGGCATCCAAAGTCTGTTGGCTTCCAATCCATTTCTGTGTCCTGCTGGAGGTTTTAACCTAGA
CAAGGATTCCGCTTATTCCTTGGTATGGTGACAGTGTCTCTCCATGGCCTGAGCAGGGAGATTATAACAGC
TGGGTTCGCAGGAGCCAGCCTTGGCCCTGTTGTAGGCTTGTTCTGTTGAGTGGCACTTGCTTTGGGTCCAC
CGTCTGTCTGCTCCCTAGAAAATGGGCTGGTTCTTTTGGCCCTCTTCTTTCTGAGGCCCACTTTATTCTGA
GGAATACAGTGAGCAGATATGGGCAGCAGCCAGGTAGGGCAAAGGGGTGAAGCGCAGGCCTTGCTGGAAGG
CTATTTACTTCCATGCTTCTCCTTTTCTTACTCTATAGTGGCAACATTTTAAAAGCTTTTAACTTAGAGAT
TAGGCTGAAAAAAATAAGTAATGGAATTCACCTTTGCATCTTTTGTGTCTTTCTTATCATGATTTGGCAAA
ATGCATCACCTTTGAAAATATTTCACATATTGGAAAAGTGCTTTTTAATGTGTATATGAAGCATTAATTAC
TTGTCACTTTCTTTACCCTGTCTCAATATTTTAAGTGTGTGCAATTAAAGATCAAATAGATACATTAAGAG
TGTGAAGGCTGGTCTGAAGGTAGTGAGCTATCTCAATCGGATTGTTCACACTCAGTTACAGATTGAACTCC
TTGTTCTACTTCCCTGCTTCTCTCTACTGCAATTGACTAGTCTTTAAAAAAAAGTGTGAAGAGTAAGCAAT
AGGGATAAGGAAATAAGATCT (SEQ ID NO:1)

MADDYGSESTSSMEDYVNFNFTDFYCEKNNVRQFASHFLPPLYWVFIVGALGNSLVILVYWYCTRVKTMTD
MFLLNLAIADLLFLVTLPFWAIAAADQWKFQTFMCKVVNSMYKMNFYSCVLLIMCISVDRYIAIAQAMRAH
TWREKRLLYSKMVCFTIWVLAAALCIPEILYSQIKEESGIAICTMVYPSDESTKLKSAVLTLKVILGFFLP
FVVMACCYTIIIHTLIQAKKSSKHKALKVTITVLTVFVLSQFPYNCILLVQTIDAYAMFISNCAVSTNIDI
CFQVTQTIAFFHSCLNPVLYVFVGERFRRDLVKTLKNLGCISQAQWVSFTRREGSLKLSSMLLETTSGALS
L (SEQ ID NO:2)

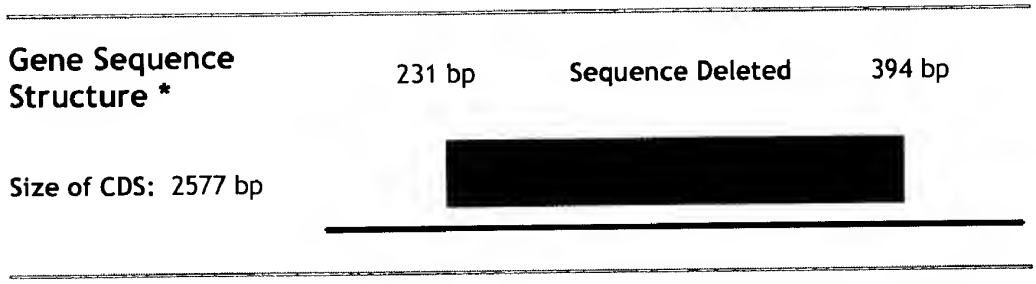
FIGURE 1

Underlined = deleted in targeting construct

Bold = sequence flanking Neo insert in targeting construct

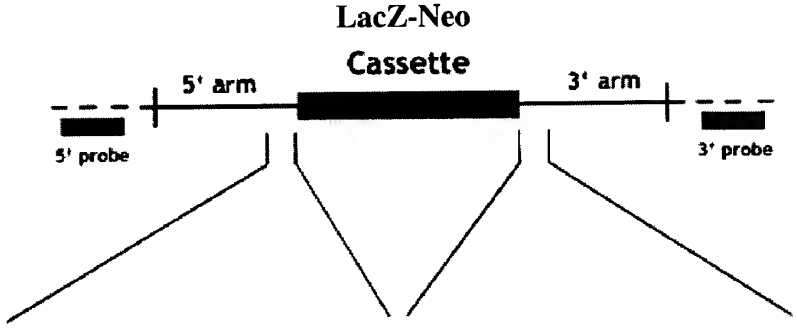
AATATTTTCCTTGACCTAATGCCATCTTGTGTCCCCTTGCAGAGCCCTATTCCTAACATG
GCTGATGACTATGGCTCTGAATCCACATCTTCCATGGAAGACTACGTTAACTTCAACTTC
ACTGACTTCTACTGTGAGAAAAACAATGTCAGGCAGTTTGCGAGCCATTTCCTCCCACCC
TTGTACTGGCTCGTGTTCATCGTGGGTGCCTTGGGCAACAGTCTTGTTAT CCTTGTCTAC
TGGTACTGCACAAGAGTGAAGACCATGACCGACATGTTCCTTTTGAATTTGGCAATTGCT
GACCTCCTCTTTCTTGTCACTCTTCCCTTCTGGGCCATTGCTGCTGCTGACCAGTGGAAG
TTCCAGACCTTCATGTGCAAGGTGGTCAACAGCA **TGTACAAGATGAACTTCTACAGCTGT**
GTGTTGCTGATCATGTGCATCAGCGTGGACAGGTACATTGCCATTGCCCAGGCCATGAGA
GCACATACTTGGAGGGAGAAAAGGCTTTTGTACAGCAAAATGGTTTGCTTTACCATCTGG
GTATTGGCAGCTGCTCTCTGCATCCCAGAAATCTTATACAGCCAAATCAAGGAGGAATCC
GGCATTGCTATCTGCACCATGGTTTACCCTAGCGATGAGAGCACCAAACTGAAGTCAGCT
GTCTTGACCCTGAAGGTCATTCTGGGGTTCTTCCTTCCCTTCGTGGTCATGGCTTGCTGC
TATACCATCATCATTCACACCCTGATACAAGCCAAGAAGTCTTCCAAGCACAAAGCCCTA
AAAGTGACCATCACTGTCCTGACCGTCTTTGTCTTGTCTCAGTTTCCCTACAACTGCATT
T TGTTGGTGCAGACCATTGACGCCTATGCCATGTTCATCTCCAACTGTGCCGTTTCCACC
AACATTGACATCTGCTTCCAGGTCACCCAGACCATCGCCTTCTTCCACAGTTGCCTGAAC
CCTGTTCTCTATGTTTTTGTGGGTGAGAGATTCCGCCGGGATCTCGTGAAAACCCTGAAG
AACTTGGGTTGCATCAGCCAGGCCCAGTGGGTTTCATTTACAAGGAGAGAGGGAAGCTTG
AAGCTGTCGTCTATGTTGCTGGAGACAACCTCAGGAGCACTCTCCCTCTGAGGGGTCTTC
TCTGAGGTGCATGGTTCTTTTGGAAGAAATGAGAAATACATGAAACAGTTTCCCCACTGA
TGGGACCAGAGAGAGTGAAAGAGAAAAGAAAACTCAGAAAGGGATGAATCTGAACTATAT
GATTACTTGTAGTCAGAATTTGCCAAAGCAAATATTTCAAAATCAACTGACTAGTGCAGG
AGGCTGTTGATTGGCTCTTGACTGTGATGCCCGCAATTCTCAAAGGAGGACTAAGGACCG
GCACTGTGGAGCACCCTGGCTTTGCCACTCGCCGGAGCATCAATGCCGCTGCCTCTGGAG
GAGCCCTTGGATTTTCTCCATGCACTGTGAACTTCTGTGGCTTCAGTTCTCATGCTGCCT
CTTCCAAAAGGGGACACAGAAGCACTGGCTGCTGCTACAGACCGCAAAAGCAGAAAGTTT
CGTGAAAATGTCCATCTTTGGGAAATTTTCTACCCTGCTCTTGAGCCTGATAACCCATGC
CAGGTCTTATAGATTCCTGATCTAGAACCTTTCCAGGCAATCTCAGACCTAATTTCCTTC
TGTTCTCCTTGTTCTGTTCTGGGCCAGTGAAGGTCCTTGTTCTGATTTTGAAACGATCTG
CAGGTCTTGCCAGTGAACCCCTGGACAACTGACCACACCCACAAGGCATCCAAAGTCTGT
TGGCTTCCAATCCATTTCTGTGTCCTGCTGGAGGTTTTAACCTAGACAAGGATTCCGCTT
ATTCCTTGGTATGGTGACAGTGTCTCTCCATGGCCTGAGCAGGGAGATTATAACAGCTGG
GTTCGCAGGAGCCAGCCTTGGCCCTGTTGTAGGCTTGTTCTGTTGAGTGGCACTTGCTTT
GGGTCCACCGTCTGTCTGCTCCCTAGAAAATGGGCTGGTTCTTTTGGCCCTCTTCTTTCT
GAGGCCCACTTTATTCTGAGGAATACAGTGAGCAGATATGGGCAGCAGCCAGGTAGGGCA
AAGGGGTGAAGCGCAGGCCTTGCTGGAAGGCTATTTACTTCCATGCTTCTCCTTTTCTTA
CTCTATAGTGGCAACATTTTAAAAGCTTTTAACTTAGAGATTAGGCTGAAAAAAATAAGT
AATGGAATTCACCTTTGCATCTTTTGTGTCTTTCTTATCATGATTTGGCAAAATGCATCA
CCTTTGAAAATATTTCACATATTGGAAAAGTGCTTTTTAATGTGTATATGAAGCATTAAT
TACTTGTCACTTTCTTTACCCTGTCTCAATATTTTAAGTGTGTGCAATTAAAGATCAAAT
AGATACATTAAGAGTGTGAAGGCTGGTCTGAAGGTAGTGAGCTATCTCAATCGGATTGTT
CACACTCAGTTACAGATTGAACTCCTTGTTCTACTTCCCTGCTTCTCTCTACTGCAATTG
ACTAGTCTTTAAAAAAAAGTGTGAAGAGTAAGCAATAGGGATAAGGAAATAAGATCT

FIGURE 2A



Targeting Vector* (genomic sequence)

Construct Number: 3340



Arm Length:
5': 2.7 kb
3': 4 kb

5'>TATTCCTTACAGAGCCTTATT CCTGGCATGTTTGATGACTTCAGC TATGACTCCACTGCTTCCACAGAT GACTACATGAATTTGAATTTCAGT AGCTTCTTCTGTAAGAAAAATAAT GTCAGGCAGTTTGCAAGCCATTTT CTCCCACCTCTGTACTGGCTTGTG TTCATTGTGGGCACCTTGGGCAAC AGCCTGGTCAT<3' (SEQ.ID.NO.3)	5'>TGTACAAGATGAACTTCTACA GCTGTGTGCTTCTCATCATGTGCA TCAGTGTGGACAGATACATTGCCA TTGTACAGGCCATGAAGGCTCAGG TCTGGAGGCAGAAAAGGCCGCTAT ACAGCAAGATGGTCTGCATTACCA TCTGGGTGATGGCAGCTGTGCTCT GCACCCCAGAAATCCTGTACAGTC AAGTCAGTGGG<3' (SEQ.ID.NO.4)

Targeting Vector
Endogenous Locus

* Not drawn to scale

FIGURE 2B